

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventors: Dranoff et al.

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(formerly 50059/005002)

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Art Unit: NA

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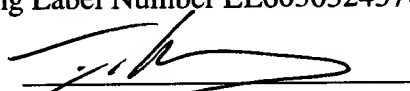
Examiner: NA

For: Tumor Antigens and
Uses Thereof

Date: August 29, 2002

CERTIFICATE OF MAILING

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Timothy M. Murphy

Honorable Commissioner of Patents
Washington, D.C. 20231

Statement of Sequence Listing

Sir:

In compliance with CFR §1.821(f), Applicants affirm that the Sequence Listing content of the paper copy and the computer readable copy are the same.

Date: August 29, 2002

Respectfully submitted,



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SEQUENCE LISTING

<110> Dranoff, Glenn
Schmollinger, Jan
Hodi, F. Stephen
Mollick, Joseph

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 Trp Pro Leu Thr Ala Glu Val Pro Pro Glu Leu Leu Ala Ala Gly
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 Asp Phe Val His Ser Val Gln Glu Thr His Ser Gln Leu Leu Gly Ser
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 195 200 205
 Gln Ser Glu Ser Ala Gln Glu Pro Gly Ala Arg Asp Val Glu Ala Gln
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 <211> 1737
 <212> DNA
 <213> Homo sapiens

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<210> 18
 <211> 578
 <212> PRT
 <213> Homo sapiens

<400> 18

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Pro	Asn	Leu	Ser	Phe	Tyr	Arg	Asn	Glu	Ile	Arg	Phe	Leu	Pro	Asn	Gly
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Cys	Phe	Ile	Glu	Asp	Ile	Leu	Gln	Asn	Trp	Thr	Asp	Asn	Tyr	Asp	Leu
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Leu	Glu	Asp	Asn	His	Ser	Tyr	Ile	Gln	Trp	Leu	Phe	Pro	Leu	Arg	Glu
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Pro	Gly	Val	Asn	Trp	His	Ala	Lys	Pro	Leu	Thr	Leu	Arg	Glu	Val	Glu
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Val	Phe	Lys	Ser	Ser	Gln	Glu	Ile	Gln	Glu	Arg	Leu	Val	Arg	Ala	Tyr
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Glu	Leu	Met	Leu	Gly	Phe	Tyr	Gly	Ile	Arg	Leu	Glu	Asp	Arg	Gly	Thr
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Gly	Thr	Val	Gly	Arg	Ala	Gln	Asn	Tyr	Gln	Lys	Arg	Phe	Gln	Asn	Leu
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Phe	Leu	Glu	Glu	Thr	Leu	Val	Arg	Arg	Glu	Leu	Pro	Gly	Val	Arg	Gln
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Ser	Ala	Leu	Asp	Tyr	Phe	Met	Phe	Ala	Val	Arg	Cys	Arg	His	Gln	Arg
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	210					215					220				
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305 Lys Glu Ser Lys Lys Arg Lys Leu Glu Leu Ser Arg Arg Glu Gln Pro
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 325 330 335
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 Arg Gln Pro Leu Gly Ala Arg Val Ala Asp Lys Val Arg Lys Arg Arg
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 Lys Val Asp Glu Gly Ala Gly Asp Ser Ala Ala Val Ala Ser Gly Gly
 405 410 415
 Ala Gln Thr Leu Ala Leu Ala Gly Ser Pro Ala Pro Ser Gly His Pro
 420 425 430
 Lys Ala Gly His Ser Glu Asn Gly Val Glu Glu Asp Thr Glu Gly Arg
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 Thr Gly Pro Lys Glu Gly Thr Pro Gly Ser Pro Ser Glu Thr Pro Gly
 450 455 460
 Pro Arg Pro Ala Gly Pro Ala Gly Asp Glu Pro Ala Glu Ser Pro Ser
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 Gly Pro Ala Gly Asp Glu Pro Ala Glu Ser Pro Ser Glu Thr Pro Gly
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 Lys Pro

<210> 19
 <211> 176
 <212> PRT
 <213> Homo sapiens

<400> 19
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 35 40 45
 Pro Lys Lys Val Pro Leu Gly Ala His Arg Arg Pro Gln Ala Pro Ala
 50 55 60
 Gln Gln Asp Leu Gln Gly Thr Ser Gln Pro Arg Ala His Arg Arg Pro
 65 70 75 80
 Gln Ala Pro Ala Arg Gln Asp Leu Gln Gly Met Ser Gln Pro Arg Ala
 85 90 95
 His Arg Arg Pro Gln Ala Pro Ala Arg Gln Asp Leu Gln Gly Thr Ser
 100 105 110
 Gln Pro Arg Ala His Arg Arg Pro Gln Ala Pro Ala Arg Gln Asp Leu
 115 120 125
 Gln Gly Thr Ser Gln Pro Arg Ala His Arg Arg Pro Gln Ala Pro Ala
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<210> 20
 <211> 49
 <212> PRT
 <213> Homo sapiens

<400> 20
 Ser Pro Ser Glu Thr Pro Gly Pro Arg Pro Ala Gly Pro Ala Gly Asp
 1 5 10 15
 Glu Pro Ala Glu Ser Pro Ser Glu Thr Pro Gly Pro Arg Pro Ala Gly
 20 25 30
 Pro Ala Gly Asp Glu Pro Ala Lys Thr Pro Ser Glu Thr Pro Gly Pro
 35 40 45
 Ser

<210> 21
 <211> 50
 <212> PRT
 <213> Homo sapiens

<400> 21
 Ala His Arg Arg Pro Gln Ala Pro Ala Gln Gln Asp Leu Gln Gly Thr
 1 5 10 15
 Ser Gln Pro Arg Ala His Arg Arg Pro Gln Ala Pro Ala Gln Gln Asp
 20 25 30
 Leu Gln Gly Thr Ser Gln Pro Arg Ala His Arg Arg Pro Gln Ala Pro
 35 40 45
 Ala Gln
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<210> 22
 <211> 9
 <212> PRT
 <213> Homo sapiens

<400> 22
 Ser Leu Gly Ser Pro Val Leu Gly Leu
 1 5

<210> 23
 <211> 10
 <212> PRT
 <213> Homo sapiens

<400> 23
 Arg Leu Ala Ser Phe Tyr Asp Trp Pro Leu
 1 5 10

<210> 24
 <211> 20
 <212> PRT
 <213> Homo sapiens

<220>
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 <222> (2)...(17)
 <223> Xaa at 2 is Thr or Met; Xaa at 4 is Gln or Arg;
 Xaa at 7 is Ala or Pro; Xaa at 16 is Arg or Gln.

<400> 24
 Gly Xaa Ser Xaa Pro Arg Xaa His Arg Arg Pro Gln Ala Pro Ala Xaa
 1 5 10 15
 Gln Asp Leu Gln

20

<210> 25
<211> 14
<212> PRT
<213> Homo sapiens

<400> 25
Ala His Arg Arg Pro Gln Ala Pro Ala Gln Gln Asp Leu Gln
1 5 10

<210> 26
<211> 20
<212> PRT
<213> Homo sapiens

<400> 26
Gly Thr Ser Gln Pro Arg Ala His Arg Arg Pro Gln Ala Pro Ala Arg
1 5 10 15
Gln Asp Leu Gln
20

<210> 27
<211> 20
<212> PRT
<213> Homo sapiens

<400> 27
Gly Met Ser Gln Pro Arg Ala His Arg Arg Pro Gln Ala Pro Ala Arg
1 5 10 15
Gln Asp Leu Gln
20

<210> 28
<211> 20
<212> PRT
<213> Homo sapiens

<400> 28
Gly Thr Ser Gln Pro Arg Ala His Arg Arg Pro Gln Ala Pro Ala Gln
1 5 10 15
Gln Asp Leu Gln
20

<210> 29
<211> 20
<212> PRT
<213> Homo sapiens

<400> 29
Gly Thr Ser Gln Pro Arg Pro His Arg Arg Pro Gln Ala Pro Ala Arg
1 5 10 15
Gln Asp Leu Gln
20

<210> 30
<211> 20
<212> PRT
<213> Homo sapiens

<220>
<221> VARIANT
<222> (1)...(20)
<223> Xaa at 9 is Arg or Ser; Xaa at 14 is Ala or Thr;

xaa at 15 is Gly or Arg; Xaa at 20 is Glu or Lys

<400> 30
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 1 5 10 15
 Glu Pro Ala Xaa
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<210> 31
 <211> 20
 <212> PRT
 <213> Homo sapiens

<400> 31
 Ser Pro Ser Glu Thr Pro Gly Pro Arg Pro Ala Gly Pro Ala Gly Asp
 1 5 10 15
 Glu Pro Ala Glu
 20

<210> 32
 <211> 20
 <212> PRT
 <213> Homo sapiens

<400> 32
 Ser Pro Ser Glu Thr Pro Gly Pro Ser Pro Ala Gly Pro Thr Arg Asp
 1 5 10 15
 Glu Pro Ala Glu
 20

<210> 33
 <211> 20
 <212> PRT
 <213> Homo sapiens

<400> 33
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 1 5 10 15
 Glu Pro Ala Lys
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<210> 34
 <211> 6670
 <212> DNA
 <213> Homo sapiens

<400> 34
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 <213> Homo sapiens

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Phe	Leu	Glu	Glu	Ser	Leu	Val	Arg	Arg	Glu	Leu	Pro	Gly	Val	Arg	Gln
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 Arg Gln Leu Val His Phe Ala Trp Glu His Phe Arg Pro Arg Cys Lys
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 Phe Val Trp Gly Pro Gln Asp Lys Leu Arg Arg Phe Lys Pro Ser Ser
 225 230 235 240
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 245 250 255
 Pro Gly Asp Pro Asp His Glu Ala Ser Thr Gln Gly Arg Thr Cys Gly
 260 265 270
 Pro Glu His Ser Lys Gly Gly Gly Arg Val Asp Glu Gly Pro Gln Pro
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 Arg Ser Val Glu Pro Gln Asp Ala Gly Pro Leu Glu Arg Ser Gln Gly
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 Asp Glu Ala Gly Gly His Gly Glu Asp Arg Pro Glu Pro Leu Ser Pro
 305 310 315 320
 Lys Glu Ser Lys Lys Arg Lys Leu Glu Leu Ser Arg Arg Glu Gln Pro
 325 330 335
 Pro Thr Glu Pro Gly Pro Gln Ser Ala Ser Glu Val Glu Lys Ile Ala
 340 345 350
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 Thr Gln Glu Val Gly Gly Gln Asp Pro Gly Glu Ala Val Gln Pro Cys
 370 375 380
 Arg Gln Pro Leu Gly Ala Arg Val Ala Asp Lys Val Arg Lys Arg Arg
 385 390 395 400
 Lys Val Asp Glu Gly Ala Gly Asp Ser Ala Ala Val Ala Ser Gly Gly
 405 410 415
 Ala Gln Thr Leu Ala Leu Ala Gly Ser Pro Ala Pro Ser Gly His Pro
 420 425 430
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 <212> DNA
 <213> Homo sapiens

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 <211> 309
 <212> DNA
 <213> Homo sapiens

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 <212> DNA
 <213> Homo sapiens

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<210> 43
 <211> 209
 <212> DNA
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 <212> DNA
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<210> 46
 <211> 1299
 <212> PRT
 <213> Homo sapiens

<400> 46

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			20					25					30		
Asp	Lys	Arg	Phe	Arg	Leu	Trp	Tyr	Val	Gly	Gly	Ser	Cys	Leu	Asp	His
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Arg	Thr	Thr	Leu	Pro	Met	Leu	Pro	Trp	Leu	Met	Ala	Glu	Ile	Arg	Arg
	50				55						60				
Arg	Ser	Gln	Lys	Pro	Glu	Ala	Gly	Gly	Cys	Gly	Ala	Pro	Ala	Ala	Arg
65					70				75						80
Glu	Val	Ile	Leu	Val	Leu	Ser	Ala	Pro	Phe	Leu	Arg	Cys	Val	Pro	Ala
			85						90					95	
Pro	Gly	Ala	Gly	Ala	Ser	Gly	Gly	Thr	Ser	Pro	Ser	Ala	Thr	Gln	Pro
		100						105					110		
Asn	Pro	Ala	Val	Phe	Ile	Phe	Glu	His	Lys	Ala	Gln	His	Ile	Ser	Arg
		115					120					125			
Phe	Ile	His	Asn	Ser	His	Asp	Leu	Thr	Tyr	Phe	Ala	Tyr	Leu	Ile	Lys
	130					135				140					
Ala	Gln	Pro	Asp	Asp	Pro	Glu	Ser	Gln	Met	Ala	Cys	His	Val	Phe	Arg
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Ala	Thr	Asp	Pro	Ser	Gln	Val	Pro	Asp	Val	Ile	Ser	Ser	Ile	Arg	Gln
			165						170					175	
Leu	Ser	Lys	Ala	Ala	Met	Lys	Glu	Asp	Ala	Lys	Pro	Ser	Lys	Asp	Asn
		180						185					190		
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	195						200					205			
Lys	Val	Thr	Val	Thr	His	Lys	Lys	Ala	Pro	Ser	Ser	Leu	Ile	Asp	Asp
	210					215				220					
Cys	Met	Glu	Lys	Phe	Ser	Leu	His	Glu	Gln	Gln	Arg	Leu	Lys	Ile	Gln
225					230				235						240
Gly	Glu	Gln	Arg	Gly	Pro	Asp	Pro	Gly	Glu	Asp	Leu	Ala	Asp	Leu	Glu
			245						250					255	
Val	Val	Val	Pro	Gly	Ser	Pro	Gly	Asp	Cys	Leu	Pro	Glu	Glu	Ala	Asp
			260					265					270		
Gly	Thr	Asp	Thr	His	Leu	Gly	Leu	Pro	Ala	Gly	Ala	Ser	Gln	Pro	Ala
	275						280					285			
Leu	Thr	Ser	Ser	Arg	Val	Cys	Phe	Pro	Glu	Arg	Ile	Leu	Glu	Asp	Ser
	290					295					300				
Gly	Phe	Asp	Glu	Gln	Gln	Glu	Phe	Arg	Ser	Arg	Cys	Ser	Ser	Val	Thr
305					310					315					320
Gly	Val	Gln	Arg	Arg	Val	His	Glu	Gly	Ser	Gln	Lys	Ser	Gln	Pro	Arg
			325						330					335	
Arg	Arg	His	Ala	Ser	Ala	Pro	Ser	His	Val	Gln	Pro	Ser	Asp	Ser	Glu
		340						345					350		
Lys	Asn	Arg	Thr	Met	Leu	Phe	Gln	Val	Gly	Arg	Phe	Glu	Ile	Asn	Leu
	355						360					365			
Ile	Ser	Pro	Asp	Thr	Lys	Ser	Val	Val	Leu	Glu	Lys	Asn	Phe	Lys	Asp
	370					375					380				
Ile	Ser	Ser	Cys	Ser	Gln	Gly	Ile	Lys	His	Val	Asp	His	Phe	Gly	Phe

385 Ile Cys Arg Glu Ser Pro Glu Pro Gly Leu Ser Gln Tyr Ile Cys Tyr
 405 410 415
 Val Phe Gln Cys Ala Ser Glu Ser Leu Val Asp Glu Val Met Leu Thr
 420 425 430
 Leu Lys Gln Ala Phe Ser Thr Ala Ala Ala Leu Gln Ser Ala Lys Thr
 435 440 445
 Gln Ile Lys Leu Cys Glu Ala Cys Pro Met His Ser Leu His Lys Leu
 450 455 460
 Cys Glu Arg Ile Glu Gly Leu Tyr Pro Pro Arg Ala Lys Leu Val Ile
 465 470 475 480
 Gln Arg His Leu Ser Ser Leu Thr Asp Asn Glu Gln Ala Asp Ile Phe
 485 490 495
 Glu Arg Val Gln Lys Met Lys Pro Val Ser Asp Gln Glu Glu Asn Glu
 500 505 510
 Leu Val Ile Leu His Leu Arg Gln Leu Cys Glu Ala Lys Gln Lys Thr
 515 520 525
 His Val His Ile Gly Glu Gly Pro Ser Thr Ile Ser Asn Ser Thr Ile
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 565 570 575
 Arg Gly Ala Asn Arg Met Arg Gly Arg Leu Gly Ser Val Asp Ser Phe
 580 585 590
 Glu Arg Ser Asn Ser Leu Ala Ser Glu Lys Asp Tyr Ser Pro Gly Asp
 595 600 605
 Ser Pro Pro Gly Thr Pro Pro Ala Ser Pro Pro Ser Ser Ala Trp Gln
 610 615 620
 Thr Phe Pro Glu Glu Asp Ser Asp Ser Pro Gln Phe Arg Arg Arg Ala
 625 630 635 640
 His Thr Phe Ser His Pro Pro Ser Ser Thr Lys Arg Lys Leu Asn Leu
 645 650 655
 Gln Asp Gly Arg Ala Gln Gly Val Arg Ser Pro Leu Leu Arg Gln Ser
 660 665 670
 Ser Ser Glu Gln Cys Ser Asn Leu Ser Ser Val Arg Arg Met Tyr Lys
 675 680 685
 Glu Ser Asn Ser Ser Ser Ser Leu Pro Ser Leu His Thr Ser Phe Ser
 690 695 700
 Ala Pro Ser Phe Thr Ala Pro Ser Phe Leu Lys Ser Phe Tyr Gln Asn
 705 710 715 720
 Ser Gly Arg Leu Ser Pro Gln Tyr Glu Asn Glu Ile Arg Gln Asp Thr
 725 730 735
 Ala Ser Glu Ser Ser Asp Gly Glu Gly Arg Lys Arg Thr Ser Thr
 740 745 750
 Cys Ser Asn Glu Ser Leu Ser Val Gly Gly Thr Ser Val Thr Pro Arg
 755 760 765
 Arg Ile Ser Trp Arg Gln Arg Ile Phe Leu Arg Val Ala Ser Pro Met
 770 775 780
 Asn Lys Ser Pro Ser Ala Met Gln Gln Gln Asp Gly Leu Asp Arg Asn
 785 790 795 800
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 805 810 815
 Leu Val Ile Phe Leu Ser Gly Glu Asp Asp Pro Glu Lys Ile Glu Glu
 820 825 830
 Arg Lys Lys Ser Lys Glu Leu Arg Ser Leu Trp Arg Lys Ala Ile His
 835 840 845
 Gln Gln Ile Leu Leu Leu Arg Met Glu Lys Glu Asn Gln Lys Leu Glu
 850 855 860
 Gly Ala Ser Arg Asp Glu Leu Gln Ser Arg Lys Val Lys Leu Asp Tyr
 865 870 875 880
 Glu Glu Val Gly Ala Cys Gln Lys Glu Val Leu Ile Thr Trp Asp Lys
 885 890 895
 Lys Leu Leu Asn Cys Arg Ala Lys Ile Arg Cys Asp Met Glu Asp Ile

900 905 910
 His Thr Leu Leu Lys Glu Gly Val Pro Lys Ser Arg Arg Gly Glu Ile
 915 920 925
 Trp Gln Phe Leu Ala Leu Gln Tyr Arg Leu Arg His Arg Leu Pro Asn
 930 935 940
 Lys Gln Gln Pro Pro Asp Ile Ser Tyr Lys Glu Leu Leu Lys Gln Leu
 945 950 955
 Thr Ala Gln Gln His Ala Ile Leu Val Asp Leu Gly Arg Thr Phe Pro
 965 970 975
 Thr His Pro Tyr Phe Ser Val Gln Leu Gly Pro Gly Gln Leu Ser Leu
 980 985 990
 Phe Asn Leu Leu Lys Ala Tyr Ser Leu Leu Asp Lys Glu Val Gly Tyr
 995 1000 1005
 Cys Gln Gly Ile Ser Phe Val Ala Gly Val Leu Leu His Met Ser
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 Glu Glu Gln Ala Phe Glu Met Leu Lys Phe Leu Met Tyr Asp Leu Gly
 1025 1030 1035
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 1045 1050 1055
 Tyr Gln Leu Ser Arg Leu Leu His Asp Tyr His Arg Asp Leu Tyr Asn
 1060 1065 1070
 His Leu Glu Asn Glu Ile Ser Pro Ser Leu Tyr Ala Ala Pro Trp
 1075 1080 1085
 Phe Leu Thr Leu Phe Ala Ser Gln Phe Ser Leu Gly Phe Val Ala Arg
 1090 1095 1100
 Val Phe Asp Ile Ile Phe Leu Gln Gly Thr Glu Val Ile Phe Lys Val
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 Ala Leu Ser Leu Leu Ser Ser Gln Glu Thr Leu Ile Met Glu Cys Glu
 1125 1130 1135
 Ser Phe Glu Asn Ile Val Glu Phe Leu Lys Asn Thr Leu Pro Asp Met
 1140 1145 1150
 Asn Thr Ser Glu Met Glu Lys Ile Ile Thr Gln Val Phe Glu Met Asp
 1155 1160 1165
 Ile Ser Lys Gln Leu His Ala Tyr Glu Val Glu Tyr His Val Leu Gln
 1170 1175 1180
 Asp Glu Leu Gln Glu Ser Ser Tyr Ser Cys Glu Asp Ser Glu Thr Leu
 1185 1190 1195
 Glu Lys Leu Glu Arg Ala Asn Ser Gln Leu Lys Arg Gln Asn Met Asp
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 Leu Leu Glu Lys Leu Gln Val Ala His Thr Lys Ile Gln Ala Leu Glu
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 Ser Asn Leu Glu Asn Leu Leu Thr Arg Glu Thr Lys Met Lys Ser Leu
 1235 1240 1245
 Ile Arg Thr Leu Glu Gln Glu Lys Met Ala Tyr Gln Lys Thr Val Glu
 1250 1255 1260
 Gln Leu Arg Lys Leu Leu Pro Ala Asp Ala Leu Ala Asn Cys Asp Leu
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 Asn Lys Pro

<210> 47
 <211> 2020
 <212> DNA
 <213> Homo sapiens

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gccggccagc	gcctgccccta	tgagtgtgtc	actggttggt	atccgatttg	agctcgcgga	240
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<210> 48
 <211> 600
 <212> PRT
 <213> Homo sapiens

<400> 48															
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			20					25					30		
Asp	Glu	Glu	Ile	Lys	Lys	Thr	Thr	Leu	Ala	Ser	Ala	Val	Ala	Cys	Leu
			35				40					45			
Glu	Gly	Lys	Ser	Pro	Gly	Glu	Lys	Val	Ala	Ile	Ile	His	Gln	His	Leu
			50				55				60				
Gly	Arg	Arg	Glu	Met	Thr	Asp	Val	Ile	Ile	Glu	Thr	Met	Lys	Ser	Asn
65					70					75				80	
Pro	Asp	Glu	Leu	Lys	Thr	Thr	Val	Glu	Glu	Arg	Lys	Ser	Ser	Glu	Ala
				85				90						95	
Ser	Pro	Thr	Ala	Gln	Arg	Ser	Lys	Asp	His	Ser	Lys	Glu	Cys	Ile	Asn
			100					105					110		
Ala	Ala	Pro	Asp	Ser	Pro	Ser	Lys	Gln	Leu	Pro	Asp	Gln	Ile	Ser	Phe
			115				120					125			
Phe	Ser	Gly	Asn	Pro	Ser	Val	Glu	Ile	Val	His	Gly	Ile	Met	His	Leu
			130				135				140				
Tyr	Lys	Thr	Asn	Lys	Met	Thr	Ser	Leu	Lys	Glu	Asp	Val	Arg	Arg	Ser
145					150					155				160	
Ala	Met	Leu	Cys	Ile	Leu	Thr	Val	Pro	Ala	Ala	Met	Thr	Ser	His	Asp
				165				170						175	
Leu	Met	Lys	Phe	Val	Ala	Pro	Phe	Asn	Asp	Val	Ile	Glu	Gln	Met	Lys
			180					185					190		
Ile	Ile	Arg	Asp	Ser	Thr	Pro	Asn	Gln	Tyr	Met	Val	Leu	Ile	Lys	Phe
			195				200					205			
Arg	Ala	Gln	Ala	Asp	Ala	Asp	Ser	Phe	Tyr	Met	Thr	Cys	Asn	Gly	Arg
			210			215					220				
Gln	Phe	Asn	Ser	Ile	Glu	Asp	Asp	Val	Cys	Gln	Leu	Val	Tyr	Val	Glu

225 Arg Ala Glu Val Leu Lys Ser Glu Asp Gly Ala Ser Leu Pro Val Met
 230 235 240
 245 Asp Leu Thr Glu Leu Pro Lys Cys Thr Val Cys Leu Glu Arg Met Asp
 250 255
 260 Glu Ser Val Asn Gly Ile Leu Thr Thr Leu Cys Asn His Ser Phe His
 265 270
 275 Ser Gln Cys Leu Gln Arg Trp Asp Asp Thr Thr Cys Pro Val Cys Arg
 280 285
 290 Tyr Cys Gln Thr Pro Glu Pro Val Glu Glu Asn Lys Cys Phe Glu Cys
 295 300
 305 Gly Val Gln Glu Asn Leu Trp Ile Cys Leu Ile Cys Gly His Ile Gly
 310 315 320
 325 Cys Gly Arg Tyr Val Ser Arg His Ala Tyr Lys His Phe Glu Glu Thr
 330 335
 340 Gln His Thr Tyr Ala Met Gln Leu Thr Asn His Arg Val Trp Asp Tyr
 345 350
 355 Ala Gly Asp Asn Tyr Val His Arg Leu Val Ala Ser Lys Thr Asp Gly
 360 365
 370 Lys Ile Val Gln Tyr Glu Cys Glu Gly Asp Thr Cys Gln Glu Glu Lys
 375 380
 385 Ile Asp Ala Leu Gln Leu Glu Tyr Ser Tyr Leu Leu Thr Ser Gln Leu
 390 395 400
 405 Glu Ser Gln Arg Ile Tyr Trp Glu Asn Lys Ile Val Arg Ile Glu Lys
 410 415
 420 Asp Thr Ala Glu Glu Ile Asn Asn Met Lys Thr Lys Phe Lys Glu Thr
 425 430
 435 Ile Glu Lys Cys Asp Asn Leu Glu His Lys Leu Asn Asp Leu Leu Lys
 440 445
 450 Glu Lys Gln Ser Val Glu Arg Lys Cys Thr Gln Leu Asn Thr Lys Val
 455 460
 465 Ala Lys Leu Thr Asn Glu Leu Lys Glu Glu Gln Glu Met Asn Lys Cys
 470 475 480
 485 Leu Arg Ala Asn Gln Val Leu Leu Gln Asn Lys Leu Lys Glu Glu
 490 495
 500 Arg Val Leu Lys Glu Thr Cys Asp Gln Lys Asp Leu Gln Ile Thr Glu
 505 510
 515 Ile Gln Glu Gln Leu Arg Asp Val Met Phe Tyr Leu Glu Thr Gln Gln
 520 525
 530 Lys Ile Asn His Leu Pro Ala Glu Thr Arg Gln Lys Ser Arg Arg Asp
 535 540 545
 545 Arg Ser Thr Ser Pro Trp Pro Arg Pro Arg Ala Leu Pro Leu Arg Gly
 550 555 560
 565 Ala Val Gly Ser Cys Pro Pro Gly Arg Ala Ala Ala Arg Gly Ala Ser
 570 575 580
 585 Asp Leu Gln Ser Asn Arg His Pro
 590 600

<210> 49
 <211> 226
 <212> DNA
 <213> Homo sapiens

<400> 49
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 ccatcagccc ccatttctgc tgcaaacctg gtcagagcca gtnttcntc catgggacct 180
 aaagacagtg ccaagtgcct gcaccgtgga ccacagccga gccact 226

<210> 50
 <211> 441
 <212> DNA
 <213> Homo sapiens

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tttctgtgat	tacttatctg	ggcttgcctt	gaccagtga	atgacattgc	cctatttggg	240
cctctgaggt	tctatttagc	tttgcatgat	tacatagtat	cccagtgatc	tgcaaaatta	300
atgccttttc	caagaaaaaa	tcttttcttc	tctgtatcag	ttaattctga	cagtgttagt	360
gattctgtct	tcattatagg	ccttatttcc	attatctctt	tctttatagt	atTTTTgtt	420
ataaagaaaa	cagtctttct	gtgtatacct	acggatgagg	gtattattta	aactgccaac	441
aatatccaag	acatggtcaa	t				

<210> 51
 <211> 393
 <212> DNA
 <213> Homo sapiens

<400> 51						60
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taggtataca	cagaaagact	gttttcttta	taacaaaaaa	tactataaag	aaagagataa	240
tggaaataag	gcctataatg	aagacagaat	cactaacact	gtcagaatta	actgatacag	300
agaagaaaaa	attttttctt	ggaaaaggca	ttaattttgc	agatcactgg	gatactatgt	360
acatctgcaa	agctaaatag	aacctcagag	gtccaaatag	ggcaatgtca	tttctactgt	393
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<210> 52
 <211> 427
 <212> DNA
 <213> Homo sapiens

<400> 52						60
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tttactctaa	gaattcagaa	acaaacatgt	gggtaacttc	ctgttatctt	aaaaaaagaa	240
tcatcccttc	ggattccctt	taactatctg	gaacttgtac	tgctatttta	taatttacca	300
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<212> DNA
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<212> DNA
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 Cys Met Lys Asn Asn Leu Pro Ser Asn Asp Ser Ser Lys Phe Lys Thr
 35 40 45
 Thr Glu Ser His Met Asp Trp Glu Lys Val Ala Phe Lys Asp Phe Ser
 50 55 60

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Lys	Asn	Pro	Tyr	Lys	Gly	Lys	Lys	Leu	Lys	Lys	His	Pro	Asp	Phe	Pro
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Lys	Lys	Pro	Leu	Thr	Pro	Tyr	Phe	Arg	Phe	Phe	Met	Glu	Lys	Arg	Ala
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Ser	Asp	Ile	Pro	Glu	Lys	Pro	Lys	Thr	Pro	Gln	Gln	Leu	Trp	Tyr	Thr
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				325					330					335	
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Thr	Arg	Leu	Leu	Ala	Arg	Met	Trp	Asn	Asp	Leu	Ser	Glu	Lys	Lys	Lys
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Ala	Lys	Tyr	Lys	Ala	Arg	Glu	Ala	Ala	Leu	Lys	Ala	Gln	Ser	Glu	Arg
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Lys	Arg	Ala	Glu	Glu	Ile	Trp	Gln	Gln	Ser	Val	Ile	Gly	Asp	Tyr	Leu
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Val	Glu	Ile	Gly	Ser	Arg	Trp	Gln	Arg	Ile	Ser	Gln	Ser	Gln	Lys	Glu
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 <212> DNA
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 35 40 45
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 50 55 60
 Gln Glu Arg Leu Val Asn Glu Thr Arg Glu Cys Gln Ser Leu Arg Leu
 65 70 75 80
 Glu Leu Glu Lys Leu Asn Asn Gln Leu Lys Ala Leu Thr Glu Lys Asn
 85 90 95
 Lys Glu Leu Glu Ile Ala Gln Asp Arg Asn Ile Ala Ile Gln Ser Gln
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 Phe Thr Arg Thr Lys Glu Glu Leu Glu Ala Glu Lys Arg Asp Leu Ile
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 Glu Ala Ser Asp Gln Val Ser Asp Asp Thr Val Glu Met Pro Leu Pro
 1845 1850 1855
 Lys Lys Leu Lys Ser Val Thr Pro Val Gly Thr Glu Glu Glu Val Met
 1860 1865 1870
 Ala Glu Glu Ser Thr Asp Gly Glu Val Glu Thr Gln Val Tyr Asn Gln
 1875 1880 1885
 Asp Ser Gln Asp Ser Ile Gly Glu Gly Val Thr Gln Gly Asp Tyr Thr
 1890 1895 1900
 Pro Met Glu Asp Ser Glu Glu Thr Ser Gln Ser Leu Gln Ile Asp Leu
 1905 1910 1915 192
 Gly Pro Leu Gln Ser Asp Gln Gln Thr Thr Thr Ser Ser Gln Asp Gly
 1925 1930 1935
 Gln Gly Lys Gly Asp Asp Val Ile Val Ile Asp Ser Asp Asp Glu Glu
 1940 1945 1950
 Glu Asp Glu Glu Asp Asp Asp Asp Asp Glu Asp Asp Thr Gly Met Gly
 1955 1960 1965
 Asp Glu Gly Glu Asp Ser Asn Glu Gly Thr Gly Ser Ala Asp Gly Asn
 1970 1975 1980
 Asp Gly Tyr Glu Ala Asp Asp Ala Glu Gly Gly Asp Gly Thr Asp Pro
 1985 1990 1995 200
 Gly Thr Glu Thr Glu Glu Ser Met Gly Gly Glu Gly Asn His Arg
 2005 2010 2015
 Ala Ala Asp Ser Gln Asn Ser Gly Glu Gly Asn Thr Gly Ala Ala Glu
 2020 2025 2030
 Ser Ser Phe Ser Gln Glu Val Ser Arg Glu Gln Gln Pro Ser Ser Ala
 2035 2040 2045
 Ser Glu Arg Gln Ala Pro Arg Ala Pro Gln Ser Pro Arg Arg Pro Pro
 2050 2055 2060
 His Pro Leu Pro Pro Arg Leu Thr Ile His Ala Pro Pro Gln Glu Leu
 2065 2070 2075 208
 Gly Pro Pro Val Gln Arg Ile Gln Met Thr Arg Arg Gln Ser Val Gly
 2085 2090 2095
 Arg Gly Leu Gln Leu Thr Pro Gly Ile Gly Gly Met Gln Gln His Phe
 2100 2105 2110
 Phe Asp Asp Glu Asp Arg Thr Val Pro Ser Thr Pro Thr Leu Val Val
 2115 2120 2125
 Pro His Arg Thr Asp Gly Phe Ala Glu Ala Ile His Ser Pro Gln Val
 2130 2135 2140
 Ala Gly Val Pro Arg Phe Arg Phe Gly Pro Pro Glu Asp Met Pro Gln
 2145 2150 2155 216
 Thr Ser Ser Ser His Ser Asp Leu Gly Gln Leu Ala Ser Gln Gly Gly
 2165 2170 2175
 Leu Gly Met Tyr Glu Thr Pro Leu Phe Leu Ala His Glu Glu Glu Ser
 2180 2185 2190

Gly Gly Arg Ser Val Pro Thr Thr Pro Leu Gln Val Ala Ala Pro Val
 2195 2200 2205
 Thr Val Phe Thr Glu Ser Thr Thr Ser Asp Ala Ser Glu His Ala Ser
 2210 2215 2220
 Gln Ser Val Pro Met Val Thr Thr Ser Thr Gly Thr Leu Ser Thr Thr
 2225 2230 2235 224
 Asn Glu Thr Ala Thr Gly Asp Asp Gly Asp Glu Val Phe Val Glu Ala
 2245 2250 2255
 Glu Ser Glu Gly Ile Ser Ser Glu Ala Gly Leu Glu Ile Asp Ser Gln
 2260 2265 2270
 Gln Glu Glu Glu Pro Val Gln Ala Ser Asp Glu Ser Asp Leu Pro Ser
 2275 2280 2285
 Thr Ser Gln Asp Pro Pro Ser Ser Ser Val Asp Thr Ser Ser Ser
 2290 2295 2300
 Gln Pro Lys Pro Phe Arg Arg Val Arg Leu Gln Thr Thr Leu Arg Gln
 2305 2310 2315 232
 Gly Val Arg Gly Arg Gln Phe Asn Arg Gln Arg Gly Val Ser His Ala
 2325 2330 2335
 Met Gly Gly Arg Gly Gly Ile Asn Arg Gly Asn Ile Asn
 2340 2345

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